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10/581,364

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EXAMINER

TORRENTE, RICHARD T

ART UNIT

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2482

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/581,364	<b>Applicant(s)</b> SAISHU ET AL.	
	<b>Examiner</b> RICHARD TORRENTE	<b>Art Unit</b> 2482	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 December 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 June 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Drawings***

1. Figure(s) 16 is/are objected to as depicting a block diagram without "readily identifiable" directional flow of each block, as required by 37 CFR 1.84(n). Rule 84(n) requires "labeled representations" of graphical symbols, such as arrow heads; and any that are "not universally recognized may be used, subject to approval by the Office, if they are not likely to be confused with existing conventional symbols, and if they are readily identifiable." In the case of Figure(s) 16, the directional flow of the blocks S10 is not readily identifiable per se and therefore require the insertion of arrow heads identifying the flow of those blocks.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an

application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:
3. The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claim(s) 1-20 is/are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
5. Claim 1 recites the limitation "the viewing zone" and "the parallel light rays" in line 7 and 17 respectively. There is insufficient antecedent basis for this limitation in the claim.
6. Claim 2 recites the limitation "the viewing zone" and "the parallel light rays" in line 17 and 21 respectively. There is insufficient antecedent basis for this limitation in the claim.
7. Claim 9 recites the limitation "the two combined images" in line 7. There is insufficient antecedent basis for this limitation in the claim.
8. Claim 10 recites the limitation "the ultimate combined image" in line 2. There is insufficient antecedent basis for this limitation in the claim.

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9. Claim 11 recites the limitation "the ultimate combined image" in line 2. There is insufficient antecedent basis for this limitation in the claim.

10. Claim 13 recites the limitation "the ultimate combined image" in line 2. There is insufficient antecedent basis for this limitation in the claim.

11. Claim 14 recites the limitation "the viewing zone" and "the parallel light rays" in line 16 and 20 respectively. There is insufficient antecedent basis for this limitation in the claim.

12. Claim 16 recites the limitation "the viewing zone" and "the parallel light rays" in line 16 and 21 respectively. There is insufficient antecedent basis for this limitation in the claim.

13. Claim 18 recites the limitation "the parallel light rays" and "the viewing zone" in line 8 and 9 respectively. There is insufficient antecedent basis for this limitation in the claim.

14. Claim 19 recites the limitation "the parallel light rays" and "the viewing zone" in line 7 and 8 respectively. There is insufficient antecedent basis for this limitation in the claim.

15. Claim 20 recites the limitation "the parallel light rays" and "the viewing zone" in line 7 and 8 respectively. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 101***

16. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO interim guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material". In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5<sup>th</sup> ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized and is thus statutory. See *Lowry*, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

Claim(s) 18-20 is/are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claims 18-20 defines a program embodying functional descriptive material. However, the claim does not define a computer-readable medium or memory and is thus non-statutory for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory

on most cases since use of technology permits the function of the descriptive material to be realized" - Guidelines Annex IV). That is, the scope of the presently claimed a program can range from paper on which the program is written, to a program simply contemplated and memorized by a person. The examiner suggests amending the claim to embody the program on "a non-transitory computer-readable medium" or equivalent in order to make the claim statutory. Any amendment to the claim should be commensurate with its corresponding disclosure.

### ***Claim Rejections - 35 USC § 102***

17. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

18. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by van Berkel et al. (US 6,064,424, hereinafter Berkel).

Regarding claim 1, Berkel discloses stereoscopic image data structure for a stereoscopic display device that displays a stereoscopic image (see abstract), with parallaxes being given in a horizontal direction but not given in a vertical direction (see 16 in fig. 2), the stereoscopic display device (e.g. see fig. 1 and 2) comprising: a display unit (see fig. 1) that has a display face on which a parallax interleaved image (see fig. 2; see column 7, lines 1-4) for stereoscopic display is displayed, with pixels being

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arranged with a first horizontal pitch (see 12 in fig. 2) in the horizontal direction; and a parallax barrier (see 15 in fig. 2) that has linear optical apertures disposed to face the display face and arranged with a second horizontal pitch (see dash lines in 16 in fig. 2) in the horizontal direction, the optical apertures inclined from the vertical direction (see 16 in fig. 2), the second horizontal pitch being equal to an integral multiple ( $n$ ) of the first horizontal pitch (see 12 and 16 in fig. 5a with fig. 5B), the parallax barrier directing light rays emitted from pixels at horizontal intervals of  $n$  pixels as parallel light rays toward the viewing zone (see fig. 1 and fig. 7), the stereoscopic image data structure comprising: a parallax component image data (e.g. see fig. 5) representing  $n$  or more parallax component images (e.g. see fig. 5), each having accumulated pixels (see  $r, g, b$  in fig. 5A) that cause the pixels to generate the parallel light rays in the same parallax direction in the viewing zone (e.g. see fig. 5), and having different numbers of horizontal pixels (e.g. see 1-7 in fig. 5A), wherein  $n$  combined images with the same numbers of vertical and horizontal pixels are a unit (e.g. see  $r, g, b$  in dashed lines in fig. 5B) to be converted into a parallax interleaved image (e.g. see interleaved  $r', r, g, g; b', b$  in fig. 5B), the  $n$  combined images being formed by combining one or more parallax component images with parallax directions different from each other by  $n$  (e.g. see fig. 5A and B).



***Claim Rejections - 35 USC § 103***

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

20. Claims 2-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berkel et al. (US 6,064,424, hereinafter Berkel) in view of Applicant Admitted Prior Art (AAPA).

Regarding claim 2, the claim(s) recite analogous limitations to claim 1, and is/are therefore rejected on the same premise.

Furthermore, although Berkel discloses n combined images (see fig. 5B), it is noted that Berkel does not disclose n combined images is recorded.

However, AAPA discloses a stereoscopic system wherein the n combined images is recorded (see ¶ [0010]).

Given the teachings as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate AAPA teachings of recording into Berkel stereoscopic system for the benefit of saving images for backup or for later retrieval.

Regarding claim 3, Berkel further discloses wherein: each of the combined images is a parallelogram (e.g. see fig. 4B); and the image data corresponding to one of

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the linear optical apertures is aligned in a vertical line in the combined images (see fig. 4).

Regarding claim 4, Berkel further discloses wherein each of the combined images has parallax component images stacked in  $m$  stages (e.g. see fig. 4B), each of the parallax component images having a vertical resolution that is  $1/m$  of a horizontal resolution (e.g. see fig. 4).

Regarding claims 5 and 6, Berkel further discloses wherein each of the parallax component images are formed by perspective projection in vertical direction according to the predetermined viewing distance and by orthographic projection in horizontal direction (see fig. 7; see column 7, lines 12-23).

Regarding claim 7, Berkel, now incorporating the teaching of AAPA, further discloses wherein the  $n$  combined images are further combined so as to form an ultimate combined image (see Berkel fig. 1 and 2) to be recorded.

Regarding claim 8, Berkel further discloses wherein the ultimate combined image is formed by combining the combined images in such a manner that the combined images having adjacent parallax directions are adjacent to one another in the horizontal direction (e.g. see fig. 5B).

Regarding claim 9, Berkel further discloses wherein: the ultimate combined image is formed by combining the combined images in such a manner that the combined images having adjacent parallax directions are adjacent to one another in the horizontal direction (e.g. see fig. 5); and the two combined images having the parallax directions at both ends of the n parallax direction close to the front face of the display face are disposed at both ends of the ultimate combined image (see fig. 5B for entire display of fig. 1).

Regarding claim 10, Berkel further discloses wherein the ultimate combined image is formed by combining the combined images in the horizontal direction and the vertical direction, so as to form a tile-like format (e.g. see fig. 5B).

Regarding claim 11, Berkel further discloses wherein the ultimate combined image has the same numbers of vertical and horizontal pixels as those of the parallax interleaved image displayed on the display face at the time of stereoscopic display (see fig. 5B).

Regarding claim 12, Berkel, now incorporating the teaching of AAPA, further discloses wherein the ultimate combined image is formed as a rectangular-parallelepiped ray space defined by a ray space method (see AAPA ¶ [0008]).

Regarding claim 13, Berkel, now incorporating the teaching of AAPA, further discloses wherein the combined images or the ultimate combined image is irreversibly compressed and then recorded (see AAPA ¶ [0012]).

Regarding claim 14, the claim(s) recite analogous limitations to claim 2, and is/are therefore rejected on the same premise.

Furthermore, Berkel discloses displaying a parallax interleaved image on the display face after converting the n combined images into the parallax interleaved image (see fig. 1 from e.g. fig. 5).

Regarding claims 15 and 17, Berkel, now incorporating the teaching of AAPA, further discloses wherein: each of the combined images is a rectangular having the same aspect ratio as the parallax interleaved image (see Berkel fig. 5B); and the conversion into the parallax interleaved image involves generation of pixel data of the parallax interleaved image through an interpolating process (see AAPA ¶ [0008]) based on one or more pixels adjacent to each other in the horizontal direction in the combined images.

Regarding claim 16, the claim(s) recite analogous limitations to claims 14, and is/are therefore rejected on the same premise.

Furthermore, Berkel discloses recording an ultimate combined image (e.g. see entire display in fig. 1) that is formed by combining n combined images (see 12 per 16 in

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fig. 5A; e.g. see images r, g, b in dashed line in fig. 5B) having the same numbers of vertical and horizontal pixels (see three r, g, b in dashed lines in fig. 5B), the n combined images being formed by combining one or more parallax component images with parallax directions different from each other by n (e.g. see r' and r in fig. 5B).

Regarding claim 18, the claim(s) recite analogous limitations to claim 2, and is/are therefore rejected on the same premise.

Regarding claim 19, the claim(s) recite analogous limitations to claim 14, and is/are therefore rejected on the same premise.

Regarding claim 20, the claim(s) recite analogous limitations to claim 16, and is/are therefore rejected on the same premise.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RICHARD TORRENTE whose telephone number is (571) 270-3702. The examiner can normally be reached on M-F: 7:30 - 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha Banks-Harold can be reached on (571) 272-7905. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Young Lee/  
Primary Examiner, Art Unit 2482

/Richard Torrente/  
Examiner, Art Unit 2482